

REMARKS

Applicant has renumbered the claims to include Claim 32, and has renumbered claim dependencies to conform. In addition, Claims 35-36 are cancelled and Claims 21, 24, 33, 34, 37 and 39 are amended.

In the October 11, 2006 non-final Office Action, Claims 21-39 were rejected on several grounds. Each of these grounds will be discussed here below.

Applicant has amended independent Claim 21 to recite that the cured composite includes residual moisture produced by a cure reaction in formation of the composite. Applicant has also amended Claim 33 to indicate that the powdered additive includes aluminum powder in a size range from about 25 to about 60 microns, the powdered additive in sufficient amount to permit uniform heating of a mass of the composition. The claimed coating compositions are characterized in that they provide a barrier to reduce loss of moisture from the composites to which they may be applied.

Water Barrier vs. Water Vapor Barrier

As a preliminary matter, Applicant draws the Examiner's attention to the website [www.aquafin.net](http://www.aquafin.net) which refers to two products that illustrate an important point: namely that a coating that is a barrier to water (liquid) absorption may not be a barrier to water vapor absorption. Thus, Aquafin® 1K provides a water barrier but not a water vapor barrier. Instead, Vaportight® Coat SG2 and SG3 provide water vapor barriers.

Ipsis Verbis Support Not Required for Support in Specification

Support for claim language may be found anywhere in the specification and need not be ipsis verbis. MPEP §2163.07(a) states in part:

By disclosing in a patent application a device that inherently performs a function or has a property, operates according to a theory or has an advantage, a patent application necessarily discloses that function, theory or advantage, even though it says nothing explicit concerning it. The application may later be amended to recite

the function, theory or advantage without introducing prohibited new matter. *In re Reynolds*, 443 F.2d 384, 170 USPQ 94 (CCPA 1971).

The Examiner has asserted that the language “without need to apply heat to the composition or substrate surface” in applying the coating materials finds no support in the specification. However, the claimed coating compositions inherently do not require heating of the substrate in order to be applied. Accordingly, this inclusion of an inherent property in the claims does not constitute new matter and is supported by MPEP §2163.07(a). In addition, Applicant does not anywhere in the application discuss or show an example that requires the application of heat. Since no heat was needed, it was not necessary to discuss substrate heating. Furthermore, the application is silent on the issue of heating of substrates. So, it must logically be assumed no heat was necessary, otherwise the application would have provided a detailed discussion. So, the language “without need to apply heat to the substrate” is supported in the specification both by inherency and by a fair reading of the application. Applicant submits that the Examiner’s position is not in accord with the MPEP §2163.07(a) or a fair reading of the specification. Reconsideration is respectfully requested on this issue.

As to the issue of enablement (the Examiner’s asserted basis for claim rejection), as opposed to “new matter:” the specification is enabled if it teaches another of ordinary skill in the art how to practice the invention without undue experimentation. See, MPEP §2164.01. Here, Applicant has described in detail how to practice and has even provided examples. None of these show heating the substrate. Therefore, a person of ordinary skill would not heat the substrate to apply the coating. It is well known and generally accepted that for enablement of a method an applicant for patent should describe the steps that must be performed. It is not required that applicant describe all those steps that need not be performed (such as NOT heating a substrate). Accordingly, Applicant submits that the specification enables embodiments of the invention, and the claims are free of new matter.

Rejection based on Anticipation

The Examiner has rejected Claims 21-23, 28-35, 38, and 39 as anticipated by Annan (US 1,333,057) which is directed to a floor wax for stone floors. (Claim 35 is newly cancelled.) To establish anticipation, each and every limitation of a claim must be found in the cited reference. See, MPEP §2131. As demonstrated here below, the Examiner has not addressed each claim limitation.

Comparing Annan to the features of independent Claims 21 and 33 and their respective dependent claims:

1. Each claim recites in coating composition is “substantially-free of entrained gasses”. This feature is not described or addressed at all in Annan, and there is nothing to suggest the mixture of Annan is free of entrained gasses. The Examiner’s assertion that, because Annan does not mention entrained air bubbles, therefore there were no entrained air bubbles is not a fair reading of Annan. Instead, it is an assumption for which the Examiner provides no documentary support. It is NOT inherent (i.e. a necessary or inevitable condition) that there would be no entrained air bubbles in the Annan composition. Accordingly, the Examiner’s prima facie case fails.
2. Each claim recites that heating the composition is not required to form a homogeneous coating as applied to a substrate. Annan requires the floor be heated to 300 °F and that the composition be heated to 212 °F to permit penetration into pores of the floor onto which it is coated. As explained above, the addition of the language to the pending claims that the substrate need not be heated reflects an inherent property of the claimed compositions and is therefore not new matter. The specification enables the practice of embodiments of the invention without heating the substrate. While the Examiner contends that the term “need not be heated” does not exclude heating the substrate, there is no indication in Annan that the floor “need not be heated.” Instead, in Annan, the floor must be heated; there is no option that Annan’s composition would work as a floor sealant if the composition and the floor are not both heated. Accordingly, the distinction in the present claims as to composition properties validly distinguishes from Annan.
3. Each claim specifies a reduction of moisture loss from the coated composite substrate. As pointed out above with reference to Aquafin®, a coating that is a barrier to water (as liquid) is not necessarily a barrier to water vapor. Annan does not address water vapor

barriers at all or loss of residual moisture from the curing process from composites. Annan deals with liquid water and stone floors only.

4. Independent Claims 21 and 33 and their dependent claims specify that the substrate from which moisture loss is reduced is a composite. Annan relates to stone floors and does not mention composites as recited in the claimed invention. Accordingly, Annan cannot anticipate Claims 21 and 33 and their dependent claims.
5. Claims 34 and 39-40 recite that the claimed compositions include a “powdered additive comprising powdered aluminum, the powdered aluminum comprising particulates in the range from about 25 to about 60 microns and the powdered aluminum present in sufficient quantity to permit uniform heating of a mass of the composition and to provide compression of a mass of the composition upon cooling sufficient to substantially exclude occluded gasses from a cooled mass.” This feature is not identically disclosed in Annan and provides another basis for lack of anticipation.

Because each and every claim feature is not identically shown in Annan, it cannot anticipate any of the claims. Applicant respectfully requests reconsideration and withdrawal of this basis for claim rejection.

#### Rejection Based on Obviousness

The Examiner rejects claims 24-27 and 36-37 as obvious due to Annan in view of Davidian. Davidian is cited for disclosing the addition of aluminum powder in the size range 25-150 microns. Claims 36 and 37 are cancelled.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify a reference or to combine the teachings of multiple references. Second, there must be a reasonable expectation of success. Third, the prior art must teach or suggest all of the recited claim limitations. MPEP §2142. Of course, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant’s disclosure. Applicant respectfully submits that the Examiner has not met all of the above criteria.

*In re Hyamizu*, 10 USPQ 2d 1393, provides appropriate teaching regarding obviousness, and in particular the aspect of “motivation” to combine references to “arrive at the claimed invention.” The opinion states in part:

“Under 35 U.S.C. 103 where the examiner has relied on the teachings of several references, the test is whether or not the references viewed individually and collectively would have suggested the claimed invention to the person possessing ordinary skill in the art. Note *In re Kaslow*, 707 F.2d 1366, 217 USPQ 1089 (Fed. Cir. 1983). It is to be noted, however, that citing references which merely indicate that isolated elements and/or features recited in the claims are known is not a sufficient basis for concluding that the combination of claimed elements would have been obvious. That is to say, there should be something in the prior art or a convincing line of reasoning in the answer suggesting the desirability of combining the references in such a manner as to arrive at the claimed invention. [\*6] Note *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986). Furthermore, it is well settled that where the claimed invention solves a problem, the discovery of the source of the problem and its solution are considered to be part of the “invention as a whole” under 35 U.S.C. 103. Note *In re Kaslow*, *supra*; *In re Nomiya*, 509 F.2d 566, 184 USPQ 607 (CCPA 1975); and *In re Sponnoble*, 405 F.2d 578, 160 USPQ 237 (CCPA 1979).” (underlining emphasis added)

The Examiner’s reasoning for combining the Annan stone-floor wax art with the Davidian “protective coating” art has rested on the notions that either the “nature of the problem to be solved in each reference is how to color a wax composition” or that both references deal with waxy coating compositions. However, since the present claimed inventions are not directed to add color, the motivation of a person of skill in the art to combine the references is absent. *In Re Hyamizu* requires a showing of the “desirability of combining the references in such a manner as to arrive at the claimed invention.” (emphasis added) Here the claimed invention relates to a residual moisture barrier coating composition, not coloration of waxes. There is no teaching or suggestion (“motivation”) in either Annan or Davidian to combine the references to arrive at the presently claimed residual moisture barrier coatings.

There does not appear to be any motivation relating to the claimed invention to combine Annan and Davidian. The Examiner has provided none except perhaps the assumption that it would be obvious to a person of ordinary skill in the art to substitute the aluminum powder of Davidian for the chromium oxide of Annan, because the “secondary reference teaches they are useful in similar wax-based compositions.” This is not a statement of motivation. Simply because a substitution can be made does not motivate a person of skill in the art to make the

substitution. The motivation must be one that is intended to guide the person of skill in the art *to arrive at the claimed invention*. The references must together teach or suggest the achievement of the claimed invention as motivation to make the substitution. See, *In Re Hyamizu* cited above. Davidian does not teach that substitution of aluminum powder for chromium oxide of Annan will provide a coating composition that meets all the recited features of the claimed invention in Claims 25-28 or 33. There is no teaching or suggestion that the combination will produce: a waxy solid free of entrained gasses that can be applied as a coating to a substrate, without need to heat the substrate that reduces moisture loss from a composite coated with the composition, or reduces residual moisture from curing of the composite.

As explained before, there must be motivation to combine references and the problem of coloration is NOT the purpose of particulates in the claimed invention. In the claimed invention, the particulates permit (1) uniform heating of the waxy melt, and (2) the exclusion of gasses from the product. So, the particulates must be present in such quantity as to perform these functions. This is explained in the application at paragraph 23, for example, which reads:

[0023] It has been found that a powdered inorganic material must be added to the mixture of aliphatic hydrocarbons to perform a function. Preferably, the powder is selected from powdered metal or metal oxide. The powdered material must be compatible with the polymers of the mixture, and have no deleterious side effects. When added into a molten mixture of the polymers, the additive assists in driving out entrapped air or other gasses, thereby reducing the incidence of occluded air in the composition. The powder also makes the solid more rigid, i.e. more stiff with increased hardness. Air or other gas bubbles in the coating will provide gaps for ingress of moisture and absorption into the composite. It has been found that certain metals and metal oxides provide the function of air exclusion. It is theorized, without being bound, that as the outer layer on a mass of the composition rapidly cools, it applies pressure to subsurface materials thereby driving out any included air. The same function is expected if the composition were to be prepared under gasses other than air. In addition, since metals are electrical conductors, the powdered metal also allows static electrical charge dissipation, thereby preventing the build up of static charge on a composite. This added advantage of static charge dissipation is a useful feature in some composite applications.

The significance of adding aluminum powder or powder of similar thermal conductivity should be considered in assessing patentability. Thermal expansion/contraction of waxes is typically 13% to 15%. By constraining the thermal expansion of wax, a pressure in excess of 2,000 psi may be produced within the coating composition. This high pressure, and the constraining effect of aluminum particles, in combination with the external pressure caused by rapid cooling, excludes air or gas bubbles thereby preventing the formation of porosity. Porosity is deemed detrimental to the water vapor barrier effect of a coating. The addition of aluminum filler facilitates the rapid cooling of the mass, which in turn increases pressure that facilitates gas bubble exclusion. Addition of aluminum increases the thermal conductivity of the mixture ( thermal conductivity of paraffin wax, for example, is 0.25 W/(m.K.) whereas it is 250 W/(m.K) for aluminum additive ). The addition of aluminum powder also increases strength and stiffness and reduces volumetric shrinkage, which may be as high as 7%. The effect of volumetric shrinkage is similar to thermal shrinkage in that high in situ compression stresses are generated in the wax mixture on a micro-scale.

The Examiner takes the position that combining for a different reason (i.e. a different motivation) meets the obviousness criteria as long as the end product “inherently has” the properties of the claimed composition. That is not the law according to *In re Hiyamizu*, 10 USPQ 2d 1393. In addition, MPEP §2143.02 states the requirement of some predictability of success. The person of skill in the art must be motivated to make the combination to achieve success in solving the existing problem to arrive at the claimed invention, not solving an unrelated other problem. For this reason the second criterion (listed above) for obviousness is an expectation of “a reasonable likelihood of success” in making the combination to achieve the claimed invention. This “likelihood of success” criterion would be a nullity under the Examiner’s interpretation of the MPEP sections cited herein. If the motivation to combine the references was for color, not for a water vapor barrier, how could one of skill in the art have an expectation of a reasonable likelihood of success in making the combination to achieve a water vapor barrier? Logic dictates that motivation must be motivation to arrive at the claimed invention, and *In re Hiyamizu*, is in accord.

The Examiner also takes the position that a patent cannot be granted for the discovery of a result which would flow logically from the prior art. (our emphasis) Applicant does not dispute this but how do the resultant here-claimed compositions “flow logically from the prior art?” The prior art fails to teach the compositions and fails to motivate a person of ordinary skill with a reasonable expectation of success that if he/she were but to combine the references, then the combination would solve the particular problem at issue and arrive at the invention.

In addition, legal obviousness further requires a third criterion: the combined references must teach all elements of the Claims. That is not the case here. The missing claim features are discussed above with reference to Annan and are not repeated here for brevity.

Finally, the claimed inventions solve a long standing problem in the art of composites as set forth in paragraph 19. The solving of a long standing problem is a strong indicator of non-obviousness. The application states at paragraph 19:

[0019] The invention solves the composite cracking problem by providing a coating composition that minimizes and/or virtually completely eliminates loss of residual moisture from composite surfaces covered with the composition. Thus, a composite will maintain its mechanical properties virtually unchanged, despite prolonged exposure to environmental conditions, as long as these conditions do not adversely affect the integrity of the coating or result in removal of the coating. For example, exposure to high temperatures might burn the coating, and exposure to solvents might remove the coating. In general, when properly applied and maintained, the coating composition will substantially prevent composite moisture loss. Thus, in most cases, the rate of moisture loss, or loss over a period of time, is reduced to at least about 50% compared to uncoated composites, and is preferably reduced by from about 60 to 100%. The composition in accordance with the invention includes a polymer mixture that includes hydrophobic organic compounds. More particularly, in one embodiment, these compounds are esters of fatty acids and aliphatic hydrocarbons, and an inorganic powder additive.

Applicant respectfully requests reconsideration and withdrawal of this basis for claim rejection.

Rejection under Section 101 of Claims 21-27 and 30-32



This basis for rejection is provisional, and is based in "obviousness" double patenting.

Applicant respectfully submits that the claims in the co-pending application are neither the same nor obvious in view of each other: A major and specific difference is that while the compositions of this application relate to a composition that prevents moisture loss from composite substrates that have residual moisture content, the compositions of 10/766,702 prevent water vapor incursion. Nonetheless, if it will facilitate prosecution and issuance of a Notice of Allowance, Applicant will tender a terminal disclaimer in this application.

### CONCLUSION

Reconsideration of the application is respectfully requested in view of the claim amendments. Applicant believes that the claims are in condition for Allowance. Should any issues of formality remain that can be dealt with in a telephone conference, the Examiner is invited to call the undersigned at (480) 385-5060.

If for some reason Applicants have not requested a sufficient extension and/or have not paid a sufficient fee for this response and/or for the extension necessary to prevent abandonment on this application, please consider this as a request for an extension for the required time period and/or authorization to charge Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,

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